

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (withdrawn): A projection electrode comprising: an electrode section for making contact with a corresponding testing target electrode; and one or a plurality of bumps formed on a surface of this electrode section and having a pointed end or ends.

2. (withdrawn): A projection electrode according to claim 1, wherein the bump has a pointed tapering end in vertical cross-section.

3. (withdrawn): A projection electrode according to claim 1, wherein the bump has a pointed tapering end in vertical cross-section and a ridge-like configuration.

4. (currently amended): A method for forming a projection electrode, comprising:
forming an electrode pattern on a wiring board;
forming a mask pattern on the electrode pattern for masking a portion of the electrode pattern, wherein the mask pattern comprises a single continuous structure with one or more portions removed to permit etching of exposed portions of the electrode pattern located directly below the removed portions of the mask pattern;

wet etching the exposed portions of the electrode pattern to form a tapered bump with a sharp pointed end ~~on portions of the electrode pattern not masked by the mask pattern;~~ and eliminating the mask pattern.

5. (previously presented): The method according to claim 4, further comprising forming a plated layer on the mask pattern-eliminated electrode pattern.

6. (previously presented): The method according to claim 4, wherein said forming a tapering bump comprises isotropically wet etching utilizing a corrosion action of an etching solution from around the mask pattern.

7. (previously presented): The method according to claim 4, further comprising forming a plated layer on the mask pattern-eliminated electrode pattern.

8. (withdrawn): An apparatus for testing an electronic component, comprising: an electrode section set in contact with a testing target electrode; one or a plurality of bumps formed on a surface of the electrode section and having a pointed end; a wiring pattern connected to the bump or bumps; and a testing apparatus body connected to the wiring pattern.

9. (withdrawn): An apparatus according to claim 8, wherein the bump has a pointed tapering end in vertical cross-section.

10. (withdrawn): An apparatus according to claim 8, wherein the bump has a pointed tapering end in vertical cross-section and a ridge-like configuration.

11. (withdrawn): A projection electrode formed in a specific pattern on a wiring board, said projection electrode comprising: a projection formed of an insulating layer and having a cross section shaped like a mountain having a pointed peak; and at least one bump provided on the projection and formed of a metal layer.

12. (withdrawn): The projection electrode according to claim 11, wherein the insulating layer is made of a material selected from the group consisting of polyimide-based resin and epoxy-based resin.

13. (withdrawn): The projection electrode according to claim 11, wherein the metal layer is made of a metal selected from the group consisting of Cu, Ni, Ag, Au, Cr, Pt, Rh and Pd.

14. (withdrawn): The projection electrode according to claim 11, wherein the projection is formed by etching the insulating layer.

15. (withdrawn): The projection electrode according to claim 11, wherein the projection is formed by applying a laser beam to the insulating layer.

16. (withdrawn): The projection electrode according to claim 11, wherein the projection is formed by means of stamping.

17. (withdrawn): The projection electrode according to claim 11, wherein the metal layer is formed by physical vapor deposition or a combination of plating and etching.

18. (withdrawn): The projection electrode according to claim 11, wherein the metal layer comprises a plurality of layers formed one upon another.

19. (withdrawn): A method for forming a projection electrode in a specific pattern on a wiring board and having at least one bump which has a cross section shaped like a mountain having a pointed peak, said method comprising the steps of: processing an insulating layer, thereby forming a projection having a cross section shaped like a mountain; forming a metal layer on the projection formed of the insulating layer; and removing a part of the metal layer.

20. (withdrawn): The method according to claim 19, wherein the step of processing an insulating layer is a step of performing isotropic etching on the insulating layer.

21. (withdrawn): The method according to claim 19, wherein the step of processing an insulating layer is a step of applying a laser beam to the insulating layer.

22. (withdrawn): The method according to claim 19, wherein the step of processing an insulating layer is a step of pressing a stamper onto the insulating layer before the insulating layer is hardened completely, said stamper having a groove identical in shape to the projection.

23. (withdrawn): The method according to claim 19, wherein the step of forming the metal layer is a step of performing physical vapor deposition or a combination of plating and etching, thereby to form a metal layer in a prescribed pattern.

24. (withdrawn): A testing apparatus for testing electronic components, said apparatus comprising: a wiring board having; and a projection electrode which is formed on the wiring board, which is to contact an electrode of an electronic component and which comprises: a projection formed of an insulating layer and having a cross section shaped like a mountain having a pointed peak; and at least one bump provided on the projection and formed of a metal layer.

25. (currently amended): A method for forming a projection electrode, comprising:
forming an electrode pattern on an electronic device;
forming a dry-film resist on the electrode pattern for masking a portion of the electrode pattern, wherein the dry-film resist comprises a single continuous structure with one or more portions removed to permit etching of exposed portions of the electrode pattern located directly below the removed portions of the dry-film resist;

etching the exposed portions of the electrode pattern to form sharp pointed bump portions on the ~~unmasked-electrode pattern not masked by the dry-film resist~~; and
eliminating the mask pattern.

26. (previously presented): The method as claimed in claim 25, wherein said etching comprises isotropically wet-etching the unmasked portions of the electrode pattern.

27. (previously presented): The method as claimed in claim 25, further comprising plating the etched portions of the electrode pattern.

28. (previously presented): The method as claimed in claim 27, wherein said plating comprises forming a layer of material the etched portions of the electrode pattern, the material comprising at least one material selected from the group of rhodium, palladium and gold.

29. (currently amended): A method for forming a projection electrode, comprising:
forming an electrode pattern on an electronic device;
forming a dry-film resist on the electrode pattern for masking a portion of the electrode pattern, wherein the dry-film resist comprises a single continuous structure with one or more portions removed to permit etching of exposed portions of the electrode pattern located directly below the removed portions of the dry-film resist;

etching the exposed portions of the electrode pattern to form sharp pointed blade-shaped bump portions on the ~~unmasked-electrode pattern not masked by the dry film resist~~;
eliminating the mask pattern.

30. (previously presented): A method as claimed in claim 29, wherein the blade-shaped portions are parallel.

31. (currently amended): A method for forming a projection electrode, comprising:
forming an electrode pattern on an electronic device;
forming a dry-film resist on the electrode pattern for masking a portion of the electrode pattern, wherein the dry-film resist comprises a single continuous structure with one or more portions removed to permit etching of exposed portions of the electrode pattern located directly below the removed portions of the dry-film resist;

etching the exposed portions of the electrode pattern to form pointed bump portions on the ~~unmasked-electrode pattern not masked by the dry film resist~~, wherein each pointed bump portion has a star-shaped cross section; and
eliminating the mask pattern.

32. (currently amended): A method for forming a projection electrode, the method comprising:

forming an electrode pattern on an electronic device;

forming a resist pattern on the electrode pattern, wherein the resist pattern comprises a single continuous structure with one or more portions removed to permit etching of exposed portions of the electrode pattern located directly below the removed portions of the resist pattern~~wherein the resist pattern is operable to cover a portion of the electrode pattern;~~

etching the exposed portions of the electrode pattern through the resist pattern to form at least one sharp pointed bump portion on the ~~unmasked portion of the~~ electrode pattern, wherein the at least one pointed bump portion has a star-shaped cross section.

33. (previously presented): A method as set forth in claim 32, wherein during said etching, the resist pattern remains in constant contact with a peripheral portion of the electrode pattern.

34. (previously presented): A method as set forth in claim 32, wherein during said etching, the resist pattern comprises a plurality of circular portions equally spaced from one another.

35. (previously presented): A method as set forth in claim 34, wherein as a result of said etching, the sharp pointed bump portions have a star-shaped cross section.